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March 12, 1955

VOL. 67, NO. 11 PAGES 161-176

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Top Talent Winners

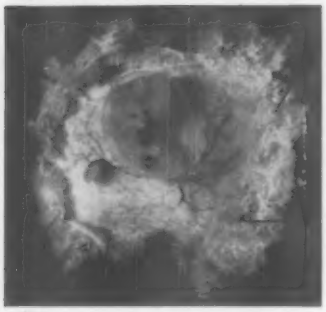
See Page 164

A SCIENCE SERVICE PUBLICATION

Kodak reports to laboratories on:

magnificent pictures of the human embryo . . . what a curious chemist found . . . making capital of the 35mm camera

The beginning



This is a 39-day human embryo. The chorion has been opened and pinned back to show the fetus in the intact amnion.

This is a 10-week human embryo in the intact amnion. The uterus has been opened to show embryo and fetal membranes *in situ*.

These are two of 14 photographs reproduced in "A Chart of Human and Primate Embryonic Development." They begin with a photomicrograph that shows sperm clinging to the periphery of the ovum and end with a 56-day embryo.

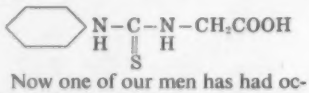
These magnificent pictures have been supplied us by the Carnegie Institution of Washington, Department of Embryology. The chart is on heavy paper, 32 inches wide and 22 inches high. The supply is limited. We are now prepared to present a copy without charge to any person or institution who will assure us that it will be used under conditions consonant with the dignity of the subject.

Requests should be addressed to Eastman Kodak Company, Medical Division, Rochester 4, N. Y. No gagsters need apply.

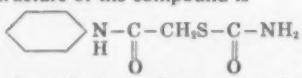
The strange and wonderful aspects of the analytical reagents business

Eastman Organic Chemical No. 734 has been successfully used during the past 35 years for the determination of cobalt and copper.

All these years we have been making (and selling) this reagent under the impression that it was phenylthiohydantoic acid, with the structure



Now one of our men has had occasion to doubt this and has proved most convincingly that the correct structure of the compound is



Accordingly we have renamed it *α-Mercaptoacetanilide Carbamate.* We shall still be happy to supply abstracts of the analytical procedures employing it.

Things like this will happen once in a while, and there's nothing to be gained by pretending they won't.

Glad we've straightened that out. This is only one of the some 3500 organic compounds we try to keep track of and on hand for the needs of the world's laboratories. Current List No. 39 *may be obtained free of charge from Distillation Products Industries, Eastman Organic Chemicals Department, Rochester 3, N. Y. (Division of Eastman Kodak Company).*

Set of tools

"Kodak Retina" designates a system of 35mm still photography built around a new camera we are just introducing into the United States. We have no illusions about the number of people in a position to make full use of such a set of photographic tools. (Not that the *Retina IIIc* outfit is particularly costly. It'll hardly be noticed in a capital equipment budget.)

Switching the front half only of the lens gives a choice of a normal-angle 50mm focal length to make permanent records of fleeting facts (it's *f*/2), an 80mm telephoto that gets details from afar, a wide-angle 35mm focal length for taking inventory of a situation photographically in close quarters. To be able to do this trick on a 24-ounce camera without optical degradation—that's new. The *Retina IIIc* camera contains an accurate photoelectric exposure meter, a 1/500-sec shutter, and means for correlating them without algebra. Coupled range-finder, of course, combined with a projected-frame viewfinder, and all the controls that the most meticulous worker could want.

This is no Sunday-in-the-park job. True, it will catch your boy in action at a ball game, but it will also

enter into marriage with a fine microscope to do some much-needed photomicrography that has been put off because a full-scale installation has seemed a little overexpansive. Or, if exquisitely detailed, larger-than-life photographs of small specimens or parts would be helpful in your records or reports, the Kodak dealer can provide details about the *Retina* equipment that has been designed for these purposes, too.

You can't expect to find Retina IIIc *cameras distributed as widely as mass market merchandise. What counts is that a world-wide organization stands behind the camera with accessories and readily available, detailed counsel on their use.*

This is one of a series of reports on the many products and services with which the Eastman Kodak Company and its divisions are . . . *serving laboratories everywhere*

Kodak
TRADE-MARK

AGRICULTURE

Rain Drowned Malenkov

Khruschev, head of Russia's Communist Party, gambled on rain and won, which meant demotion for Ex-Premier Malenkov. Vast agricultural program seen.

➤ A DROUGHT in Russia last year would have saved the premiership for Georgi M. Malenkov. A drought this spring and summer can spell an end for Nikita S. Khruschev, new first secretary of the Communist Party.

Khruschev gambled on rain east of the Ural Mountains last year, where his vast agricultural "battle for grain" is now going on, and won. But unless he is firmly entrenched in the power seat of the Kremlin before harvest time this year, a drought could dry up his farm program and leadership.

Russia is suffering from an unfavorable economic balance with a population that increases at an estimated 3,000,000 persons a year, and a food supply that does not keep pace. As a solution, Khruschev initiated the battle for grain last year, which called for an immense increase of new land to be devoted to grain crops.

So vast is Khruschev's grain cultivation program that it calls for about a fivefold increase from last year to this, and an increase of from 12 to 13 times the amount of new land to be sown to grain by next year. Last year, the Russians undertook to cultivate only 5,700,000 new acres. This year, the amount of new lands to be sown will be increased to 26,400,000 and it is planned that in 1956, from 69,000,000 to 74,000,000 new acres will be put under the plow.

The new land, or land long uncultivated, for the program is to be cultivated entirely by tractor power. It is to be carried out mostly in the area east of the Urals and principally in southwestern Siberia and Kazakhstan.

It is in this area that rain becomes the most important factor. This part of the Soviet Union has a short growing period, averaging 120 days.

The annual precipitation is less than 16 inches. Droughts in the late spring and summer, aggravated by hot dry winds that whip across the Steppes, are the rule rather than the exception.

The harvest period, which is when rain does fall for the most part, makes drying the grain a problem and complicates the combine operations.

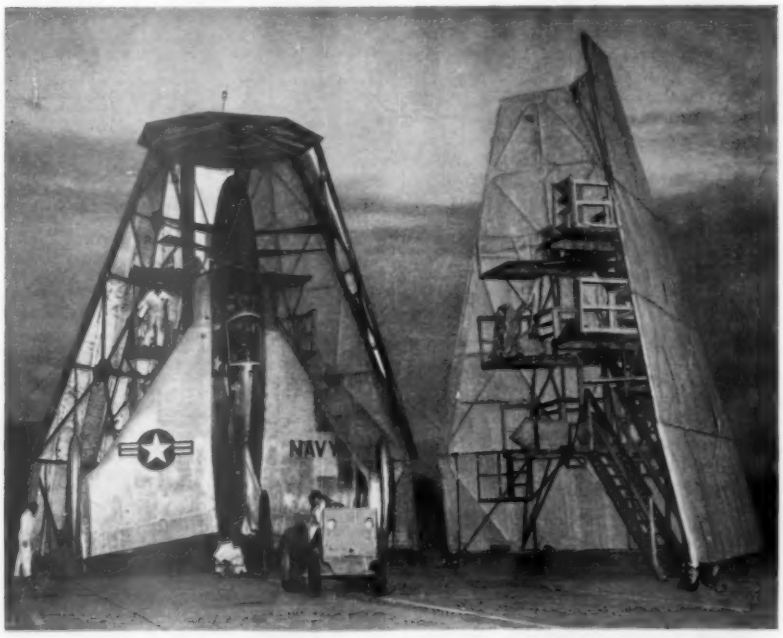
In 1953, a drought in this area cut production, but 1954 was a good year and the crop production increased appreciably. Khruschev's program of increased production seemed to work. He was now in a position to dictate. If a drought had occurred during the expansion of acreage last year, he would have failed and Malenkov could have eliminated Khruschev.

Malenkov's admission that he failed in agricultural production increases indicates that he had been opposed to Khruschev's rapid expansion program. He was forced to acknowledge its success publicly.

American agricultural experts are skeptical concerning the future success of the new battle for grain. They say that a greater part of the land chosen for the program is not suitable for good production.

In addition to the problems of climate, there is an inadequate supply of workers in this sparsely settled region of Russia. Another problem is weeds and there is also the problem that a considerable amount of the new land is alkaline soil that would take gradual reclamation before it could be turned over to grain crops.

Time and climate will be the eventual dictators of the success of the new battle for grain in Russia, but it is believed that Khruschev is hoping for a good storm to weather this spring and summer.



TEPEE FOR "POGO"—A tractor maneuvers the XF-1 "Pogo" plane into position for housing in its unique hangar at Brown Field Naval Auxiliary Air Station near San Diego, Calif. The tepee-shaped hangar on wheels enfolds the plane like halves of a clamshell. The tepee's triple-deck work platform permits easy access to every part of the plane.

Purges Help Khruschev

➤ NIKITA KHRUSCHEV'S power in the Kremlin has been strengthened. The purging of the ministers of state farms and for the coal industry on March 2 means that the Russians are giving the "full steam ahead" treatment to the programs for heavy industry and increased grain production, pushed by Khruschev.

Both A. I. Kozlov, formerly minister of state farms, and A. S. Zasyadko, formerly minister for the coal industry, worked under former premier Georgi Malenkov, who opposed the heavy industry push and the increased grain battle.

State farms have assumed an increasing importance in Khruschev's plan to cultivate more than 100,000,000 new acres of Russian soil for grain crops between 1954 and 1956.

The problem in the coal industry is a little more puzzling to American observers. Russia's coal reserves, the amount of coal thought to be underground and untapped, are estimated to be 1,200,000 million metric tons, or 24% of the world's total. This is compared to 1,723,000 million metric tons in the United States, or 34% of the world's total.

In addition to having a good reserve, Russia's coal production has steadily increased since the war and is higher now than at any time before World War II.

It is believed, however, that Russia's increases in coal production in the last few years have been mainly in low grade coal and lignite.

GENERAL SCIENCE

Pick Top STS Winners

Frederick Greenleaf of Allentown, Pa., received $2,800 grand award of the Science Talent Search. Kathleen Hable of Loyal, Wis., won the $2,000 scholarship.

See Front Cover

A 17-YEAR-OLD Pennsylvania high school senior, who is solving an old chemical problem brought up to date by the atomic age, was named grand winner of the Fourteenth Annual Science Talent Search in Washington.

Frederick Paul Greenleaf of Allentown High School, Allentown, Pa., received the $2,800 Westinghouse Grand Scholarship. Runner-up for the top award and recipient of a $2,000 scholarship was Kathleen Anne Hable, 18, of Loyal, Wis., attending Columbus High School, Marshfield, Wis., who conducted studies in heredity. Both are pictured on the front cover this week's SCIENCE NEWS LETTER.

The winners of the Science Talent Search, which is administered by SCIENCE SERVICE through Science Clubs of America, were announced at an awards banquet, following an address by Donald A. Quarles, assistant secretary of defense. The banquet culminated a five-day competition among 40 young high school seniors from 17 states.

The 40 teen-agers, picked from 2,575 entries of other students throughout the nation, were brought to Washington to take part in the Science Talent Institute and to compete for the scholarships, provided by the Westinghouse Educational Foundation.

The young Pennsylvania scientist took first place with a project in which he is developing a method to isolate rare earth metals more cheaply and more efficiently than is now practiced. He has developed a method of distillation separation that may lead to new horizons for industry.

Rare earth metals, such as samarium and europium, have long remained a mystery, simply because there was not enough of them available to find out what they could be used for. The coming of atomic reactors has meant that more and more rare earth metals are now being produced as fission by-products.

Frederick discovered that present methods of separating the rare earths, which occur together in ore form, are inefficient, expensive and laborious. After much experimentation, he found that an old chemical method of separation, that of distillation, could be effectively and cheaply used to boil off the rare earths one at a time.

He accomplishes this feat by adding an organic compound to the solution of the mixed metals. By slowly heating his "still," the metal with the lowest temperature fractions out of the mixture first, then another rare earth metal, and so on.

The young researcher, who sees the use of his development in other ore refining processes and possibly for atomic energy production, plans to attend Lehigh University and combine studies of electrical engineering with physics. Eventually, he hopes to operate a business of his own doing basic research in chemistry and physics.

Kathleen Hable, who took second honors, made a three-part study of heredity for her scientific project. She bred mice and studied their color inheritance. She followed mutations and Mendel's theories of inheritance in Drosophila fruit flies. In the third phase of her study, she charted the family trees of some of her neighbors for specific physical characteristics.

In one family, she traced the eye coloring through three generations. In another, she found 65 persons of both sexes in four generations had inherited the hair-line pattern known as a "widow's peak."

Kathleen's family studies also revealed that while color blindness was handed down from father to son through three generations, harelip occurred in 24 individuals of four generations and was inherited by both males and females.

The daughter of a doctor and registered nurse, the high school scientist hopes to become a doctor of medicine too. She plans to attend Marquette University in the fall.

Eight other finalists received $400 scholarships and the other 30 received scholarships of $100 each.

A majority of persons can use alcohol in moderation, but it is believed that the majority of people cannot do the same for *opiates.*

PROJECTS EXHIBITED—Some of the projects of the 40 top competitors for Science Talent Scholarships are demonstrated by these high school scientists.

Left column, beginning at the top are: Carol Myers, showing her tests with vaccinated mice; Charles Eichman and his paleontological collection; David Fleishbacker, with his project on evolution, and John Stone, showing a low Reynolds number wind tunnel he built.

Center column are: Patricia Tate, testing for cholesterol and blood pressure; John MacDonald, delving into fourth-dimensional geometry; Vaughan Aandahl, who placed third in the competition, showing his collection of insects, and Daniel Wilson, with his experiment on the Liedenfrost Effect.

Right hand column are: Alice Hartley, testing for acidity; Agris Kalnajs, with his "nim" machine that stumped visitors to the exhibition in a game of numbers; James Havey, Jr., explaining spectral lines, and Stephen Webb, proving a geometrical theorem for curved space.

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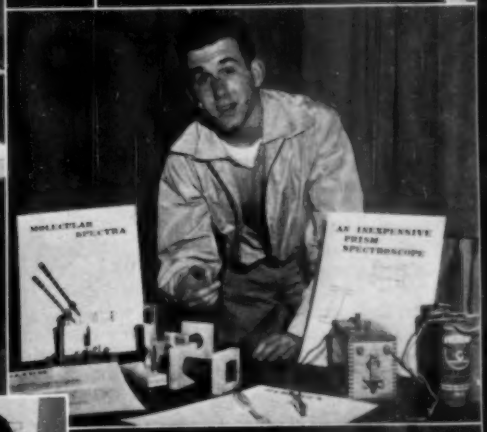
O MAKE
ACCINE


EXPERIMENTATION


FREEDOM
OLUTION IN THREE WAYS


MOLECULAR
SPECTRA
AN INEXPENSIVE
PRISM
SPECTROSCOPE


THEOREM 2
THEOREM

GENERAL SCIENCE

Winners of Scholarships

GRAND SCHOLARSHIP OF $2,800

Greenleaf, Frederick Paul, Allentown, Pa.

$2,000 SCHOLARSHIP AND ALTERNATE FOR $2,800

Hable, Kathleen Anne, Marshfield, Wis.

ALTERNATE TO THE $2,000

Aandahl, Vaughan Allan, Denver, Colo.

SCHOLARSHIPS OF $400

Aandahl, Vaughan Allan, Denver, Colo.
Briggs, Thomas Stafford, San Francisco, Calif.
Eichman, Charles Jetter, Audubon, N. J.
Hoffmann, Roald, New York, N. Y.
Marshall, Winston Stanley, Nashville, Tenn.
Nergaard, David Karl, Princeton, N. J.
Potter, James Emerson, Rockford, Ill.
Wilson, Daniel Hughes, Kansas City, Kans.

ALTERNATES

1st alt. Barth, Rolf Frederick, New York, N. Y.
2nd alt. Shilling, A. Gary, Fremont, Ohio

SCHOLARSHIPS OF $100

Bachrach, David, Brooklyn, N. Y.
Barth, Rolf Frederick, New York, N. Y.
Buccino, Robert Anthony, Fairfield, Conn.
Fassnacht, Robert Earl, South Bend, Ind.
Fishman, Roberta Jane, Forest Hills, N. Y.
Fleishhacker, David, Claremont, Calif.
Foster, Edward John, Fairfield, Conn.
Fried, Michael Martin, Forest Hills, N. Y.
Harman, Mary Ella, Brooklyn, N. Y.
Harriman, John Edward, Appleton, Wis.
Hartley, Alice Katherine, Bridgeport, Conn.
Havey, James Halbert Jr., Del Paso Heights, Calif.
Hawkins, Carol Irene, So. Charleston, W. Va.
Kalnajs, Agris Janis, Newtonville, Mass.
Kripke, Bernard Robert, New Rochelle, N. Y.
Levine, Stephen Samuel, Brooklyn, N. Y.
MacDonald, John Lauchlin, University, Miss.
Myers, Carol Elnora, Canastota, N. Y.
Penney, David Emory, Jackson, Miss.
Reed, Jack Donald, Evanston, Ill.
Rosen, Michael Ira, Brooklyn, N. Y.
Shilling, A. Gary, Fremont, Ohio
Sommerfield, Martin David, Evanston, Ill.
Stone, John William, Charleston, W. Va.
Tate, Patricia Ann, Greenville, Ill.
Tollman, Janet, Omaha, Nebr.
Vaughan, Maurice Hamilton Jr., Wilmington, N. C.
Webb, Stephen Richard, Urbana, Ill.
Webster, Norman Adelbert III, Trenton, N. J.
Williams, Lawrence Ernest, Youngstown, Ohio

Addresses are locations of the schools from which entries were made.

Science News Letter, March 12, 1955

AGRICULTURE

Vampire Bats Pose Menace

➤ THE BLOOD-SUCKING vampire bats of eastern Mexico are becoming more and more a menace to humans and livestock each year. An effective method of controlling these frightening and hairy creatures may be all but impossible.

This is the conclusion of Walter W. Dalquest of Midwestern University, Wichita Falls, Texas, who has studied more than 10,000 vampires in their natural habitat.

Any control must be cheap and simple, Mr. Dalquest states. Fumigating, shooting, smoking or sealing up the mouths of caves are either too laborious or too expensive.

One possible control, which Mr. Dalquest says should be investigated, is painting crude oil or creosote on the necks and cheeks of horses and cattle.

The investigator makes this suggestion because the vampire bats of eastern Mexico usually bite burros, horses and cattle on the cheeks and necks, at the base of the ears or slightly below. Oxen are usually bitten on the cheeks, and chickens and turkeys on the legs just above the place where the feathers begin.

Human beings in Mexico, he adds, are usually bitten on the cheeks. Children are bitten far more often than adults, and women more often than men.

When the vampire bat attacks, it is a quick razor-like bite with no attempt to hold or chew. The food of the bats consists entirely of the blood of mammals and birds.

They are a menace to man and animal because they are thought to spread disease, cause a loss of blood which may result in death and, in some cases, a running bat wound will be infected by bacteria or parasitic insect larvae. It is thought that in Trinidad, Panama and South America, they carry rabies and such cattle diseases as foot and mouth.

Crude oil or creosote might provide a control, because "vampires are so adapted to feeding on domestic animals at the present time that actual protection of livestock might result in wholesale starvation of the bats."

Mr. Dalquest reported the results of his study of vampire bats to *The American Midland Naturalist* (Jan.).

Science News Letter, March 12, 1955

PHYSIOLOGY

One Puff on Cigarette Starts Postnasal Drip

➤ A SINGLE puff on the average cigarette starts globules of mucus forming at the back of the nose and throat, Dr. Mervin C. Myerson, throat specialist, reported in *California Medicine* (Feb.).

This can be seen by an instrument, called a pharyngoscope, that lets the doctor look into this part of the throat. And it explains why "all smokers have postnasal drip."

Science News Letter, March 12, 1955

• RADIO

Saturday, March 19, 1955, 5:00-5:15 p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Otto Struve, professor of astronomy, University of California, Berkeley, Calif., and director of Leuschner Observatory, will discuss "News of the Universe."

MEDICINE

Test Detects Measles Five Days Before Rash

➤ A SIMPLE test that will detect measles as early as five days before the rash appears is annnounced by Drs. Victor Tompkins and John C. Macaulay of the New York State Health Department and Albany Medical College, Albany, N. Y., in the *Journal of the American Medical Association* (Feb. 26).

The test is made on mucus taken from the back of the nose. During the pre-rash, "catching" stage of measles a special type of cell can be found in this nasal mucus and in sputum when examined under the microscope.

The cells were not found in patients with colds, hay fever or other allergy, German measles and other rashes.

The test has not been used enough to be sure of its reliability but the Albany doctors think it encouraging enough to warrant trial by other physicians.

Science News Letter, March 12, 1955

SCIENCE TALENT INSTITUTE SCENES — Left side, beginning at top: Four of the top 40 competitors for Westinghouse Scholarships share a joke with President Eisenhower; Congresswoman Marguerite Stitt Church (R-Ill.) at banquet with two competitors; 12 top winners with Donald A. Quarles, assistant secretary of defense; Dr. S. W. Herwald of Westinghouse Electric Corp., and Dr. Leonard Carmichael, secretary of the Smithsonian Institution, show young scientists a radar device.

Right side, beginning at top: Dr. I. I. Rabi of Columbia University, Sir Hugh S. Taylor of Princeton University and Dr. William H. Sebrell, director of the National Institutes of Health talk to some of the competitors; Watson Davis, director of Science Service and Mr. Quarles congratulate the top three winners; young scientists see electron microscope at Bureau of Standards demonstrated by Dr. R. S. Roth; and three former STS winners, Armand Brumer, Ray Schiff and Dr. Bernard Strehler, sitting at the right of the table, meet this year's group.


stinghouse

BIOLOGY

Fat and Protein Layers May Hold Life Secret

➤ GREEN-TOPPED LAYER CAKES of alternating protein and fat tissue appear when the electron microscope is turned on chloroplast cells, basic structures for the support of life.

Chloroplasts, the non-living chemicals in these cells by which plants carry on photosynthesis, have been photographed through the electron microscope by Dr. J. J. Wolken, biophysicist at the University of Pittsburgh Medical School. New methods which he has worked out for using the electron microscope have revealed fine details in the structure of minor parts of living cells.

Phosphorus occurs in the chemical compounds most intimately connected with life processes. Dr. Wolken is trying to relate the structure of these compounds to the shape of the molecules containing them and thus get further clues to the secret of energy transfer within the cells. Application of what is learned about cell growth and nutrition in these studies may aid in solving the mystery of cancer. Announcement of Dr. Wolken's discoveries was made by the American Cancer Society.

Science News Letter, March 12, 1955

MEDICINE

Skin Grafts Take on Child Lacking G.G.

➤ A SEVEN-YEAR-OLD boy whose blood lacks disease-fighting gamma globulin may be able to help surgeons to better success in the future in grafting skin and other body tissues from one person to another.

Skin from a woman not related to the boy has been grafted onto the boy's thigh and has survived and remained intact for 11 months, Drs. Robert A. Good and Richard L. Varco of the University of Minnesota and the Variety Club Heart Hospital, Minneapolis, report in the *Journal of the American Medical Association* (Feb. 26).

Ordinarily grafts from one person to another of skin or any other tissue except eye corneas do not survive very long. Doctors have thought the reason was that the patient's body built antibodies against the graft just as it would build antibodies against disease germs. But so far they have not had proof for this theory.

The little boy who lacks gamma globulin, and therefore cannot form antibodies, seems to have given proof, or at least strong supporting evidence for the theory, since the graft took and survived.

His own skin grafted onto another child did not survive.

Because of his lack of gamma globulin, the Minnesota boy has what his doctors term almost complete "immunologic paralysis," meaning the mechanism in his body that should help him develop immunity, or resistance, to disease has been paralyzed. Because of this he has been plagued almost continuously since he was six months old with one germ infection after another, including at least seven severe attacks of pneumonia, and three attacks of bacterial meningitis.

About 30 patients, some of them grown persons, have been found lacking in gamma globulin since the report three years ago of the first one known. These and others like them may, when thoroughly studied, give doctors knowledge of the dynamics of antibody production and methods for its control.

Transplanting glands and other organs from one person to another and better ways of stopping germ diseases might result.

Science News Letter, March 12, 1955

ZOOLOGY

Teddy Bears Surviving After Near Extinction

➤ AUSTRALIA'S MOST lovable animal, the cuddly koala teddy bear, has won its battle for survival.

Twenty-five years ago the koala almost became extinct. There were only five left in South Australia, a few hundred in sanctuaries in New South Wales and only in southern Queensland were they still numerous.

For many years they had been hunted relentlessly for their pelts which were exported to Canada. They have a tough skin and thick, soft fur. The pelts were in great demand for making heavy rugs.

To avoid a public outcry, the pelts were sent overseas as wombat skins and sold under that name in the United States.

During the depression the Queensland government declared an open season for koalas to give people out of work a chance to earn money. During the next few weeks 100,000 were shot and koalas became almost extinct in Queensland.

Keith Minchin, whose father was director of the Adelaide Zoological Gardens, helped to save the koala. He secured three bears from the last wild colony in South Australia and several others which had been sent to Adelaide from Queensland as a Christmas attraction for a city store.

By 1946 he had so many koalas, all descended from the three survivors of the last colony and the store pets, that he had to transfer the surplus to Rocky River on Kangaroo Island, S.A.

The numbers on the Phillip Island sanctuary off the Victorian coast had also begun to increase.

In 1952 it was discovered the koalas had eaten nearly all their food supplies and were in danger of starving to death. The public rushed to the rescue with carloads of gum-tips.

Some bears were transferred to the mainland to restock other sanctuaries. Today these sanctuaries are full of healthy young koalas.

They are also once more on the increase in New South Wales and Queensland.

Science News Letter, March 12, 1955

IN SCIEN

INVENTION

Polarization Measures Radioactive Fall-Out

➤ USING THE principles by which polarizing glasses protect the eyes from glare, a new instrument has been devised to study the radioactive fall-out of nuclear explosions.

It was developed by Dr. Zdenek Sekera, associate professor of meteorology at the University of California at Los Angeles, to determine the amount and size distribution of particles in atomic clouds. The study is being sponsored by the Atomic Energy Commission in cooperation with U.C.L.A.'s Atomic Energy Project.

The instrument, known as a photoelectric polarimeter, measures polarization of sky-light with the aid of polarizing prisms. Atomic dust particles scatter light in a different manner than those of normal air. This different scattering produces different polarization of sky-light which can be measured by the instrument.

From such data Dr. Sekera hopes to determine amount and size distribution of particles in atomic clouds. Such information will be useful in predicting dangerous fall-out patterns of atomic clouds.

It has been found that the vast amount of dust and other material sucked up into the atmosphere following atomic explosions affects sky-light polarization in a manner similar to large volcanic eruptions. Such effects were noted after the tremendous eruptions of Krakatoa in 1883 and of Katmai in 1912, Dr. Sekera said.

Science News Letter, March 12, 1955

MEDICINE

American Plant Yields Blood Pressure Drug

➤ RESERPINE, CHEMICAL used in treating high blood pressure and also for some mentally sick persons, has been obtained from the Central American plant, Rauwolfia heterophylla, Dr. Francis A. Hochstein and associates of Chas. Pfizer and Co., Inc., Brooklyn, N. Y., announced at an American Chemical Society meeting in New York.

Drug manufacturers have been getting reserpine from an Indian plant, Rauwolfia serpentina. Six months ago the Indian government placed an embargo on exportation of the plant.

Besides reserpine, the Pfizer chemists got from the Central American plant a new chemical, heterophyllin, and five other alkaloid chemicals which have previously been reported.

Science News Letter, March 12, 1955

CE FIELDS

NUTRITION

Lose Weight Together in Eight Lessons With Dinner

➤ PEOPLE WHO want to lose weight or need to for health reasons can do it more effectively if they do it in a sociable, community get-together way, it appears from results reported by Miss Alfretta E. Dickinson, University of Illinois home adviser for Winnebago County, Ill., at the National Rural Health Conference in Milwaukee, Wis., sponsored by the American Medical Association.

In a course of eight two-hour lessons, including two joint meetings and a joint low-calorie dinner, the 159 overweights loss from four to 28 pounds each, with an average of 13½ for the men and 10 for the women.

County medical and home bureau organizations, state officials and medical groups and the University of Illinois sponsored the program. Only those referred by their physicians were admitted to the course.

Science News Letter, March 12, 1955

BOTANY

Discover Plants Emit Light Like Fireflies

➤ GREEN PLANTS give off light, much as fireflies do.

Isolation of the substance responsible for the green plants' emitting light is now being made, Dr. Bernard L. Strehler, assistant professor of biochemistry at the University of Chicago, told the 40 winners of the Fourteenth Annual Science Talent Search in Washington.

Discovery of the fact that plants are emitting a faint red light that cannot be seen with the naked eye was made by Dr. Strehler and Dr. William Arnold of Oak Ridge National Laboratory. He has successfully produced a luminescent substance in the laboratory, which may be identical to the as yet unfound substance producing light in living green plants.

The laboratory-produced substance that emits light was obtained by combining the extracts of dead boiled green plants with a known chemical substance originally separated from hog kidney powders.

"All of these findings were made possible by the study of fireflies and luminous bacteria. It is now thought that there is a close relationship between light emission which releases energy and photosynthesis, which stores energy," the Chicago biochemist said.

"Even more surprising is the fact that the same chemical compounds which are responsible for light emission in fireflies and the luminous bacteria often causing lighted fish at night, are involved in photosynthesis."

Stating that these substances may very well be the first chemically stabilized product in photosynthesis, Dr. Strehler, a Science Talent Search winner in 1943, revealed the discoveries in a talk given to the young scientists attending the five-day Science Talent Institute and competing for Westinghouse Science Scholarships.

He emphasized that the discoveries are but one phase of numerous experiments now being conducted throughout the world to find out how plants use sunlight to build up its starchy substance that means food to man.

The Science Talent Search is conducted by SCIENCE SERVICE.

Science News Letter, March 12, 1955

PSYCHOLOGY

Use Mirrors to Teach Children to Read

➤ SUCCESS WITH a mirror method for teaching school children to read was announced by Dr. William C. Barger, of the Bureau of Child Guidance, New York City Board of Education, at the meeting of the American Orthopsychiatric Association in Chicago.

The children were normal except for severe reading disability. This was due to mixed dominance of the right and left sides of their brains. Instead of seeing letters as most persons do, they saw them as the letters would appear in a mirror.

Dr. Barger's mirror method, used till now only in the laboratory, was tried for an entire school year on 70 pupils. In every case there was noticeable improvement. Usually the child gained two years of reading progress in six months.

Being able to read better and more easily also improved the child's emotional makeup so that he became more responsive and better adjusted.

Associated with Dr. Barger in the work with mirrors were Miss Ruth I. Lavin and Frederick E. Speight.

Science News Letter, March 12, 1955

AGRICULTURE

Cross Pheasant With Bronze Turkey

➤ SUCCESS IN crossing pheasants and turkeys, apparently achieved only once before and that 200 years ago, is announced by V. S. Asmundson and F. W. Lorenz of the University of California Poultry Department in Davis, Calif.

Weight of the mature hybrids of this cross is between the turkey and the pheasant. The head furnishings look like those of the pheasant. The plumage color, from the cross between ring-neck pheasant and Bronze turkey, is dark brown shading to black except on the wings which are lighter.

The hybrids apparently are sterile. The experiments in which the hybrids were obtained are reported in *Science* (Feb. 25).

Science News Letter, March 12, 1955

MEDICINE

Drugs Stop Killing by Kidney Tuberculosis

➤ TUBERCULOSIS OF the kidney is no longer the killer it was 10 years ago. New drugs have cut deaths from this cause to eight percent instead of the 80% of nine years ago, Dr. John K. Lattimer of New York reported to the Chicago Medical Society in Chicago.

The new drugs Dr. Lattimer reported on are streptomycin, para-amino salicylic acid, or PAS for short, and isoniazid. They are used in various combinations but never singly.

Treatment takes a year and patients must be at rest in bed.

Dr. Lattimer's report on the life-saving effects of these drugs was based on studies on 625 patients at the Kingsbridge Veterans Hospital, New York.

"Paradoxically," Dr. Lattimer pointed out, "it is also possible that we may see an increase in renal [kidney] tuberculosis at some later date as a result of these new drugs.

"More and more patients with pulmonary tuberculosis are now refusing to go to sanatoria. Instead, they are going home on ambulatory treatment with the new drugs. As their symptoms improve, they tend to reduce the dosage of their medication, thus reducing the effectiveness of this treatment.

"As a consequence, their sputums become positive again and they may spread the tuberculosis among their children and among their contacts in the community, thus causing a later increase in renal tuberculosis."

Science News Letter, March 12, 1955

PHYSIOLOGY

Ears Need Time to Recover From Noise

➤ EARS EXPOSED to very loud noise may need much more time to recover than previously thought, warns Dr. J. Donald Harris of the medical research laboratory at the USN Submarine Base in New London, Conn. For prevention of partial deafness, work periods in very noisy industries may therefore need to be set to allow recovery time after the point at which audiometer tests show hearing has returned to normal.

The extra time is needed for recovery from the effects of latent damage.

Dr. Harris investigated the subject after reading a report in a Swedish scientific journal showing that nerve cells in the ear may show changes after what are generally regarded as harmless noises and that these changes may last long beyond the time needed for complete recovery of hearing.

Dr. Harris found such latent damage in the first four persons he tested, though there were individual variations. He reports details of his findings and method of study in the *Journal of the Acoustical Society of America* (Jan.).

Science News Letter, March 12, 1955

METEOROLOGY

Tornado Season Here

"Twisters" are most numerous in the spring and early summer. Squall lines, along which tornadoes are found, will be tracked by new devices this year for first time.

By ANN EWING

➤ THE "SEASON" for destructive tornadoes, nature's most violent storms, is at hand. Weather Bureau records show that 68% of all "twisters" in the United States occur between March and June.

Tornadoes can start whirling any month at any hour of the day or night east of the Rocky Mountains, but they are most frequent in May and June in the late afternoon. They have, however, been reported in every state.

Usually the "twister" is seen as a funnel-shaped cloud, swinging down toward the earth from the base of a dark thundercloud. It spins rapidly, and wherever the whirling funnel touches ground, destruction follows. Houses are leveled or blown apart by its tremendous force.

Close by, a tornado has a very distinctive sound "like the roar of a swarm of jet planes overhead," Dr. Morris Tepper, chief of the Weather Bureau's severe local storms research unit, told SCIENCE SERVICE.

The width of the storm's destructive path is usually only a few hundred yards, and its length is only about ten miles. During the half hour or so of its existence, a tornado swirls forward at 20 to 30 miles an hour. The winds that whip around its low pressure center have been estimated as up to 500 miles an hour.

Although every state has had at least one tornado in the last 50 years, the storms are most frequent in the midwest plains states—northern Texas, Oklahoma, Kansas, Nebraska and Iowa.

Definite conditions are required to spawn a "twister." That is the reason certain regions are hit more often than others.

Hot and Cold Air

At the surface, abnormally warm, humid and oppressive weather prevails, with winds usually from a southern direction. Above this damp, hot air, at 8,000 to 10,000 feet, is a cooler air current, generally moving from west to east.

Both near the surface and aloft, tornado development is accompanied by narrow belts of swift air, meteorologists believe.

These conditions provide the necessary unstable atmosphere for the violent storm. Another factor is required, however. This is the long line of thunderstorms in which the spinning funnel is usually embedded. Stretching for 100 miles or so, and moving from west to east, this line is called a squall line. It is characterized by severe thunder, strong wind squalls and heavy rains, as well as considerable lightning.

FUNNEL OF DESTRUCTION — Swooping down on a town, a tornado can leave total destruction in its wake. "Twisters," such as the one shown here, are the most violent of all nature's storms.

This squall line is also known as a pressure jump line, since a sudden rise in barometric pressure always accompanies it. This is the "trigger" for tornado birth. Before meteorologists are able to tell when and where tornadoes will strike, they will have to be able to predict the development and movement of these pressure jump lines, Dr. Tepper believes.

"We suspect," he said, "that these lines are atmospheric gravity waves that form and move according to the same rules that govern the formation and movement of ocean waves."

To learn how to use these lines in a tornado warning system, the Weather Bureau plans to set up in late spring, probably somewhere in northern Texas, a special research network of ten instruments, known as variographs, to signal barometric pressure changes.

When pressure changes meet certain specifications set up in the instrument, a bell will ring or light flash automatically, alerting the observer, a civic-minded citizen who will notify the nearest Weather Bureau of the passage of a pressure jump.

These extra observations are necessary since the pressure jump lines are about 100 miles long, which is just a little more than the distance between Weather Bureau stations. To identify and track the lines accurately requires observations spaced no more than 20 to 25 miles apart.

"The Weather Bureau believes that if advance knowledge of the existence and direction of movement of a pressure jump line were available," Dr. Tepper said, "communities in its path could be warned of the time to expect trouble."

This would further reduce the danger zone included in tornado advisories. An area about half the size of a state is usually alerted now.

Pinpointing tornado occurrence and movements, Dr. Tepper said, will not be solved until future studies have also revealed where and why tornadoes break out on the pressure jump line itself.

Warning Systems

For the present, the best warning system consists of community networks, now numbering several hundred, that work like this:

Observers, mostly on the outskirts of a town or city, are alerted to the danger of "twisters" whenever an area tornado forecast has been issued by the Weather Bureau. They usually man stations on hilltops or high buildings, particularly to the south and west of the city. When a tornado is spotted, the observer notifies a control point.

Urgent community-wide warnings are then issued.

The low death rate, especially among school children, at San Angelo, Texas, when it was struck by a tornado on May 11, 1953, is credited to an alert received in time for students to reach inside hallways.

Squall lines can be identified and tracked by radar. Under a new plan, soon to go into operation, several communities in Texas and Louisiana have raised the funds required — about $10,000 — to modify Weather Bureau radar sets for this special use. The Texas A & M Research Foundation modifies the sets.

Whenever an echo that looks suspicious is spotted by radar, a state police car operating in that area will be dispatched immediately by radio to investigate, as now planned. If the storm is a tornado, communities lying in its path will be warned.

About ten radar sets have been installed so far, and another five are expected to go into operation this spring.

Lightning discharges, known as "sferics," a contraction of the word atmospherics, also give a clue to tornado occurrence. Working on the theory that "twisters" occur with exceptionally severe lightning, several

scientists, particularly Dr. H. L. Jones of Oklahoma A. & M., are studying the possibility of identifying and tracking tornadoes by these electrical discharges.

Their equipment tells them the direction from which strong lightning strokes are coming. By using three or more stations, it may be possible to pinpoint the storm's location. Three sferics stations in Texas and Louisiana will be operated by the Weather Bureau this spring, and the U. S. Air Force will have a similar network in Oklahoma.

When whole-state or half-state tornado warning advisories are issued by the Weather Bureau, no particular action is called for, except an extra close following of radio reports and an occasional glance at clouds to the west and south if the sky becomes threatening.

When a person actually sees a tornado approaching, however, swift action is called for.

The safest place to be during a "twister" is in a cave, storm cellar or other underground excavation that has an air outlet. If time does not permit this, lie flat in the nearest depression such as a ditch or ravine in the open country. Always try to move at right angles to the tornado's path.

In a city, seek inside shelter, preferably along the inside walls on the lower floors of a steel-reinforced building. It is wise to stay away from windows.

At home in a frame house, the southwest corner of the lowest floor, the basement if possible, offers the most safety.

People living in brick or stone houses should find other shelter, such as a storm cellar or the southwest corner of a frame house.

If time permits, turn off the gas and electricity.

Science News Letter, March 12, 1955

MEDICINE

"Jet" Shot In Arm

➤ THE MILITARY has even gone automatic on its "shots" in the arm. Pistol-shaped jets for injecting typhoid and other vaccines have been developed at the Army Medical Service Graduate School, Washington, D. C.

The new device has been tried on military inductees at an Army reception center with good results, Dr. Joel Warren of Walter Reed Army Medical Center, Washington, and Frank A. Ziherl, Arthur W. Kish and Louis A. Ziherl of Cleveland, report to the *Journal of the American Medical Association* (Feb. 19).

The new jets are called automatic jet injection syringes. They are designed for speedy vaccination of large numbers of persons. In the most recent study 1,685 persons were vaccinated daily in groups of 117 to 252. Those trained to use the new automatic jet syringes were able easily to keep pace with highly trained corpsmen using preloaded hypodermic needles and syringes.

While not entirely painless, inductees said the jet injection did not hurt as much as a needle injection given at the same time in the other arm.

The needle-free automatic injector shoots a tiny jet of vaccine right through the skin under about 250 pounds of pressure in about one second.

The device is run by a motor-driven hydraulic pump. The injector unit is built like an automatic pistol with two triggers. The lower trigger reloads and cocks the piston, and the upper trigger "fires."

The present design is not considered a final one ready for commercial production. The units now available are the property of the armed services and are for use solely for research and development.

Science News Letter, March 12, 1955

MEDICINE

Disease Virus Raised In Embryonic Fishes

➤ A NEW way of propagating disease-causing viruses has been discovered through use of the embryos of an aquarium fish that bears its young alive.

Following success in culturing through eight generations of the eastern equine encephalomyelitis or EEE virus, it is now hoped that viviparous fishes will be used in the study of the puzzling animal virus causing foot and mouth disease or aftosa.

Reported to the New York Academy of Sciences by Dr. Murray Sanders and Manuel G. Soret of the University of Miami, South Miami, Fla., the living embryos are removed by Cesarean operation upon the common mosquito-eating fish, Gambusia. The virus grows in the embryo fish as they are reared in simple tissue culture fluid.

The American Museum of Natural History's Lerner Marine Laboratory at Bimini, in the Bahamas, where the fish are found, was the scene of the development that may now be used for the successful propagation of other human viruses.

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

AMERICAN STRATEGY IN THE ATOMIC AGE—Col. George C. Reinhardt—*University of Oklahoma Press*, 236 p., $3.75. A student of military strategy talks here about what can be done to make war less likely.

AMIKUK—Rutherford G. Montgomery—*World Publishing Co.*, 204 p., illus., $2.75. A book for children recounting the exciting life of a sea otter in the seas around the Aleutian Islands.

THE ANCIENT INHABITANTS OF JEBEL MOYA (SUDAN)—Ramkrishna Mukherjee, C. Radhakrishna Rao and J. C. Trevor with appendices by Frank Addison and the authors—*Cambridge University Press*, 123 p., illus., $7.50. A study of the skeletons of the people who lived on the site in the thousand years before Christ.

ARCHAEOLOGICAL EXCAVATIONS IN MESA VERDE NATIONAL PARK, COLORADO, 1950—James A. Lancaster, Jean M. Pinkley, Philip F. Van Cleave and Don Watson — *Govt. Printing Office*, National Park Service Archaeological Research Series, Number Two, 118 p., illus., paper, $1.00. Material found in excavations described here tell the story of the development and final disappearance of people who lived in this region from the time of Christ to 1300.

ARMOUR RESEARCH FOUNDATION ANNUAL REPORT FOR THE FISCAL YEAR ENDING AUGUST 31, 1954—Haldon A. Leedy, director — *Armour Research Foundation*, 56 p., illus., paper, free upon request direct to publisher, Technology Center, 10 West 35th St., Chicago 16, Ill.

BINOCULARS, TELESCOPES AND TELESCOPIC SIGHTS: How They Work, How to Select Them, and How to Design and Build Your Own — Truman Henson — *Greenberg*, 515 p., illus., $9.50. Practical instructions for the amateur who wants to build his own instrument, but also enough elementary optics so that he can understand what he is doing.

CONTRIBUTIONS TO PLANT ANATOMY—Irving W. Bailey — *Chronica Botanica*, 259 p., illus., $7.50. A selection of papers made by the author himself.

CREATIVE HANDICRAFT: Teaches Students to Think and to Plan—Ira C. Madden—*Goodheart-Willcox*, 224 p., illus., $3.75. Projects for the elementary school shop and how to use the tools involved.

CULTURAL ANTHROPOLOGY—Melville J. Herskovits — *Knopf*, 569 p., illus., $6.50. An abridged edition bringing up to date the author's basic work, "Man and His Works."

CURRICULUM GUIDE FOR TEACHERS: A Curriculum Devised by the Training School Faculty — Neil A. Dayton, Supt. — *Mansfield State Training School*, 92 p., paper, 50 cents. To aid in teaching those of subnormal intelligence.

A DICTIONARY OF METALLOGRAPHY — R. T. Rolfe—*Chemical Publishing Co.*, 1st American ed., 287 p., $5.75. An encyclopedic treatment of technical terms from abrasion and absolute temperature to zirconium.

ELECTROPLATING ENGINEERING HANDBOOK—A. Kenneth Graham and H. L. Pinkerton, Eds.—*Reinhold*, 650 p., illus., $10.00. Reference work for the electroplater and electroplating engineer.

ENGINEERS' JOB DIRECTORY—Oliver P. Bardes—*Decision*, 36 p., paper, $2.25. Listing principal employing companies and giving the products they manufacture, addresses and names of persons to whom to apply for employment.

EVOLUTION OF THE VERTEBRATES: A History of the Backboned Animals Through Time — Edwin H. Colbert—*Wiley*, 479 p., illus., $8.95. A text for the general student on vertebrate paleontology.

FACTORIAL ANALYSIS FOR NON-MATHEMATICIANS — C. J. Adcock — *Melbourne University Press (Cambridge University Press)*, 88 p., illus., $3.00. For the psychology student who is terrified by mathematics texts.

THE FOSSIL EVIDENCE FOR HUMAN EVOLUTION: An Introduction to the Study of Paleoanthropology—W. E. LeGros Clark—*University of Chicago Press*, 181 p., illus., $6.00. Presenting some of the main sources of evidence and examining the conclusions that might be drawn from them. The author, a leader in the field, is professor of anatomy at the University of Oxford.

FUNDAMENTAL RESEARCH IN WATER POLLUTION ABATEMENT AT MELLON INSTITUTE—Richard D. Hoak—*Mellon Institute*, 17 p., paper, free upon request direct to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa.

GLASS REINFORCED PLASTICS—Phillip Morgan, Ed.—*Philosophical Library*, 248 p., illus., $10.00. Contributions on varied aspects of the subject brought together from not easily available sources.

HEALTH SUPERVISION OF YOUNG CHILDREN: A Guide for Practicing Physicians and Child Health Conference Personnel—Committee on Child Health of APHA — *American Public Health Association*, 179 p., illus., paper, $2.00. An aid to keeping the child in good health, mentally as well as physically.

HIGHER TRANSCENDENTAL FUNCTIONS: Volume III—Based in part on Notes Left by Harry Bateman and compiled by the Staff of the Bateman Manuscript Project—*McGraw-Hill*, 292 p., $6.50. The final volume of this unique reference work.

THE HUMAN ORGANISM — Russell Myles De Coursey—*McGraw-Hill*, 550 p., illus., $5.75. A text integrating anatomy and physiology for the liberal arts student.

INDUSTRIAL AUTOMATIC CONTROLS — Millard H. LaJoy—*Prentice-Hall*, 278 p., illus., $6.65. A beginning text for a college course. A representative group of applications is described.

INDUSTRIAL FERMENTATIONS: Volume II — Leland A. Underkofler and Richard J. Hickey, Eds.—*Chemical Publishing Co.*, 578 p., illus., $12.00. A compilation of modern industrial practices covering particularly the manufacture of vitamins, enzymes and the new antibiotics.

LAND-USE IN THE RAMAH AREA OF NEW MEXICO: An Anthropological Approach to Areal Study—John L. Landgraf—*Peabody Museum*, Reports of the Ramah Projects, Report No. 5, 98 p., illus., paper, $1.65. Describing some of the changes which took place in a small area of western New Mexico between 1871 and 1941.

THE LANGUAGE OF SOCIAL RESEARCH: A Reader in the Methodology of Social Research—Paul F. Lazarsfeld and Morris Rosenberg, Eds.—*Free Press*, 590 p., illus., $6.75. A teaching aid in the training of social scientists, and a point of departure for development of the field.

LANGUAGE AND SOCIETY — Joseph Bram — *Doubleday*, Doubleday Short Studies in Sociology, 66 p., paper, 95 cents. An introductory but systematic treatment.

A MANUAL OF PAPER CHROMATOGRAPHY AND PAPER ELECTROPHORESIS — Richard J. Block, Emmett L. Durrum, Gunter Zweig and others—*Academic*, 484 p., illus., $8.00. A practical manual summarizing proved procedures employing simple equipment and available reagents.

MARVELS OF INDUSTRIAL SCIENCE—Burr W. Leyson, *Dutton*, 189 p., illus., $3.50. The information necessary so that we may put industry's new products to the uses for which they are best suited.

MEETING THE COSTS OF MEDICAL CARE — Robert M. Cunningham, Jr. — *Public Affairs Committee,* Public Affairs Pamphlet No. 218, 28 p., illus., paper, 25 cents. Explaining to the individual the advantages of hospitalization and medical care plans and what they do not cover.

METEOR ASTRONOMY—A. C. B. Lovell—*Oxford University Press,* 463 p., illus., $9.60. Does not include the subject of meteor physics, left for a future complementary volume, nor any discussion of meteorites.

NEW APPROACHES TO INDUSTRIAL HUMAN RELATIONS—Wallace F. Bennett and others—*American Management Association,* 32 p., paper, $1.25. Articles of inspiration and specific help for personnel workers.

NEW PRACTICAL FORMULARY—Mitchell Freeman—*Chemical Publishing Co.,* 376 p., $7.95. A book of recipes for use in industry, the laboratory and the home.

ORGANIZING THE PERSONNEL FUNCTION EFFICIENTLY: Two Company Histories—H. W. Botruff and others—*American Management Association,* 33 p., paper, $1.25.

PATENT LAW IN THE RESEARCH LABORATORY —John Kenneth Wise—*Reinhold,* 145 p., $2.95. Telling the industrial research worker how patent rights may be acquired, preserved, or lost by his ordinary daily conduct.

PRACTICAL WORSTED COMBING—T. F. Griffin —*Chemical Publishing Co.,* 169 p., illus., $4.00. Useful to those actually employed on or having access to the machines.

PROCEEDINGS OF SYMPOSIUM ON 25 YEARS OF PROGRESS IN MAMMALIAN GENETICS AND CANCER —Elizabeth Shull Russell, Ed.—*Roscoe B. Jackson Memorial Laboratory,* 851 p., illus., paper, limited quantity free upon request direct to publisher, Bar Harbor, Maine.

PROTO-LIMA: A Middle Period Culture of Peru—A. L. Kroeber—*Chicago Natural History Museum,* Fieldiana: Anthropology, Volume 44, Number 1, 157 p., illus., paper, $4.00. A delayed report of an expedition to Peru in 1925 and 1926.

QATABAN AND SHEBA: Exploring the Ancient Kingdoms on the Biblical Spice Routes of Arabia —Wendell Phillips—*Harcourt, Brace,* 362 p., illus., $5.00. Here, the author states, is the story of a dream, but the attainment of such a dream, he warns, may bring "the torture of split lips, swollen tongues, frozen fingers, dysentery, fever, heartbreak, and monotony."

THE ROMANCE OF TREES IN FACT AND FANCY —Mary Funk Hazel—*Mary Funk Hazel,* 117 p., illus., paper, $2.50. For the nature lover and student of trees. Illustrated with lovely photographs.

SELECTED BIBLIOGRAPHY ON ALGAE: Number Three—*Nova Scotia Research Foundation,* 74 p., paper, free upon request direct to publisher, Dennis Building, Granville Street, Halifax, N. S. Including besides utilization of this plant, sections on biological, botanical, and ecological studies and on the chemical structure of seaweed extracts.

SOCIAL SCIENCE RESEARCH COUNCIL ANNUAL REPORT 1953-1954 Pendleton Herring, president —*SSRC,* 98 p., paper, free upon request direct to publisher, 230 Park Ave., New York 17, N. Y.

SOCIAL ORGANIZATION — Scott A. Greer — *Doubleday,* Double Short Studies in Sociology, 68 p., paper, 95 cents. A brief text formulating some laws of organization.

SURFACE COATINGS AND FINISHES — Philip L. Gordon and George J. Dolgin—*Chemical Publishing Co.,* 299 p., illus., $9.00. Paint and varnish technology has progressed from an empirical art to a relatively exact science.

WHY NOT SURVIVE? — Michael W. Straus — *Simon and Schuster,* 272 p., illus., $4.00. The author, former U. S. Commissioner of Reclamation, believes we do have enough natural resources to meet the growing needs of our improving standard of living.

THE YEARBOOK OF THE INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS 1954—*International Council of Scientific Unions,* 81 p., paper, 5 s.

YOUTH'S OUTLOOK ON THE FUTURE: A Cross-National Study—James M. Gillespie and Gordon W. Allport—*Doubleday,* Doubleday Papers in Psychology, 61 p., paper, 85 cents. A study of the worries, hopes and problems of college students. Most youth regard war as needless and preventable. They are, however, pessimistic as to the possibility of avoiding a third world conflict.

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MEDICINE

Bloodsuckers Produce Anti-Clotting Agent

➤ FINGERTIP SIZED glands in the mouths of bloodsucking lampreys secrete an anti-blood clotting chemical which scientists hope can be put to work helping humans troubled with blood that clots too readily and causes strokes, coronary thrombosis and some other conditions.

Discovery of this lamprey chemical was announced by Dr. George Y. Shinowara of Ohio State University under a grant from the American Cancer Society.

Science News Letter, March 12, 1955

BOTANY

NATURE RAMBLINGS

Pussy Willow

➤ WHAT THE first robin is in the animal world, pussy willows are in the world of plants—the universally recognized early heralds of spring.

There are other animals and plants that sound the very first notes—although not much earlier than these, at that—but robin and pussy willow recollections date back to childhood, and are known by everyone. They will, therefore, hold their primacy so long as our race has any traditions.

There are many kinds of pussies borne by as many kinds of willow; for the name of the willow tribe is legion, ranging from the humble, foot-high prairie willow with its tiny, glistening catkins, to the great gnarled and spreading trees of the black willow, or the weeping willow, imported from Europe, which we see in cemeteries and on lawns.

The largest and finest pussy willows, which now have a considerable sale at florists' shops, are those of the goat willow, a native of Europe and Asia.

These harmless, charming, furry wild kittens, so beloved of children everywhere, are in reality the flower clusters of the willow. Unlike most trees, willows and their relatives are bisexual, that is, male and female flowers are borne on separate individuals. The necessity for transferring pollen for some distance, plus the fact that wind has to be depended on in the absence of any reliable insects at this time of year, accounts for the enormous numbers of flower clusters on every tree—for each catkin consists of from 20 to 100 separate, primitive flowers.

It is the business of the females to catch the pollen that is shed into the air in invisible clouds by the yellow male catkins on other trees. After fertilization is thus brought about, the seeds of the willows are launched on little cottony parachutes, much like those of the cottonwood, but less woolly and hence less troublesome.

If you have a vase of pussy willows, either from the florist's or obtained in the old-fashioned natural way, you can easily establish a willow bush of your own, and thus be sure of an abundant supply of catkins every year. Just let them stand in water until they throw out roots, and then plant them in your back yard, or, if the ground is still frozen, in a pot of sand until the soil outdoors thaws out. Willows are the toughest of plants, and will grow even in the shadow of a railroad yard or a blast furnace.

Do this and in a couple of years you will have a thrifty willow bush that will bear a crop of gray velvet fairy kittens every spring.

Science News Letter, March 12, 1955

GENERAL SCIENCE

Chemist Would Certify U. S. Population "C.P."

➤ THE U. S. is C.P.—communist pure—if the rigorous standards of the chemist for purity are applied.

Dr. Harold C. Urey, University of Chicago Nobel prize winner in chemistry, analyzed the communist situation and found that the contamination is only "a couple hundredths percent of the population," a percentage that would allow any chemical to be labeled C.P., meaning chemically pure.

Admitting that 25,000 members of the Communist party may appear to be a large number, Dr. Urey, in the *Bulletin of the Atomic Scientists* (Feb.), said that there are about ten times as many people in this country who are sufficiently insane to be confined in institutions and the number of ambulatory cases is unknown.

Dr. Urey's comments were made in an attack on present personnel security regulations, triggered by the sudden suspension of the security clearance of Dr. Edward U. Condon by Secretary of the Navy Charles Thomas last Oct. 21. Dr. Condon subsequently retired as director of research for Corning Glass Works and is now a consulting physicist in Berkeley, Calif., for Corning and other companies.

At the time of his resignation, Dr. Condon stated that he was unwilling "to continue a potentially indefinite series of reviews and re-reviews," and had withdrawn his clearance application. The former director of the National Bureau of Standards had been cleared four times since the end of World War II.

"Denial of clearance to Edward Condon," Dr. Urey charged, "causes me to have a complete and utter lack of confidence in the clearance procedures and in the competence, good sense and good intentions of the people who have been instrumental in the repeated withdrawal of clearance to which Condon has been subjected during the last seven years.

"This includes some high officials of the United States, including the present vice-president of the United States and the Secretary of the Navy."

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STATISTICS

More Widows in U. S. But Proportion Smaller

➤ THE UNITED States now has almost twice as many widows as in 1920 but the proportion of women in the population who are widows has been decreasing at every period of life.

Compared with the present figure of more than 7,400,000, there were 5,700,000 widows in 1940 and less than 4,000,000 in 1920. This is an increase of almost 90%, while during the same period the number of adult females in the population showed a 63% increase, statisticians of the Metropolitan Life Insurance Co. point out.

The fact that the proportion of widows in the population has been decreasing while the number has been increasing is explained by the marked decline in mortality.

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PHYSICS

History of H-bomb Told by Dr. Teller

➤ A LITTLE more historical light on the H-bomb, but no new information as to what makes it explode, is contained in an article by Dr. Edward Teller, University of California physicist, published in *Science* (Feb. 25).

Dr. Teller, Hungarian-born scientist who is credited with the idea that made the H-bomb practical, names a large number of scientists as participating in the development of the thermonuclear bomb. He particularly gives Frederic de Hoffmann praise for "a fine calculation" and observes that his name also should have been signed to a report which presumably was the one that showed that "even before the Greenhouse tests in 1951 it became evident to a small group of people in Los Alamos that a thermonuclear bomb might be constructed in a comparatively easy manner."

The H-bomb is credited by Dr. Teller to Los Alamos, and not to the Livermore laboratory to which Dr. Teller went in 1951.

The idea that seismographs can be used to detect atomic bomb explosions receives confirmation in Dr. Teller's recital that he watched the Nov. 1, 1952, H-bomb explosion jolt an earthquake recording machine at the University of California.

Science News Letter, March 12, 1955

MEDICINE

Find Cells Affected By Thyroid Hormone

➤ DISCOVERY OF the parts of living cells in the body that are directly affected by the hormone of the thyroid gland in the neck was announced by Prof. Henry Lardy of the University of Wisconsin at an American Chemical Society meeting at the Northern Regional Research Laboratory in Peoria, Ill.

The thyroid's hormone is called thyroxine. It acts, Prof. Lardy found, on microscopic powerhouses called mitochondria found in every living cell. Mitochondria house the enzyme systems which carry on much of the energy-extracting and energy-transmitting functions of living cells and tissues.

Thyroxine is converted by the body into a substance named tri-iodothyronine before it affects the cell's enzyme system.

Tri-iodothyronine acts by decreasing the efficiency with which the body traps the energy in food, but it speeds up the machinery of metabolism. The reaction is like putting an automobile into second gear: the engine speeds up, efficiency is lowered, but total power available is greater.

The particular generator in the mitochondrian powerhouse that is affected by tri-iodothyronine is the one concerned with tapping energy in fats and carbohydrates.

The hormone acts specifically on the enzyme systems that carry on intermediate metabolism of carbohydrates, Prof. Lardy said.

Tri-iodothyronine prolongs the test-tube life of mitochondria carrying on oxidative processes. This may simply be a result of test-tube conditions and may not hold true in the living organism, Prof. Lardy said, but if it does, the substance may be more beneficial than now realized in maintaining tissues, particularly those directly involved with energy reactions such as muscle tissue, in a vigorous condition.

Associated with Prof. Lardy were Drs. Gladys Maley and Ken Timita.

Science News Letter, March 12, 1955

BIOLOGY

Study Relationship of Organic Fats to Growth

➤ THE SIGNIFICANCE of the relationship between organic fats or lipids and growth is being investigated by Dr. John McMenamim, associate professor of biology at Occidental College on leave to do research at the University of California at Los Angeles.

He discovered the relationship by stopping the function of the thyroid glands in nine-day old chick embryos.

Just before the 21-day hatching time of normal chicks he examined the embryos and found their growth was three days behind schedule. He also found that lipid levels in their livers were only about half those of normal embryos.

Chickens normally have a high level of lipids, particularly cholesterol. The lipid level of yolk, the growing embryo's food source, is also high. Just before a normal chick hatches there is a marked acceleration in its utilization of these organic fats.

What part these fatty substances play in the development of the chick the last few days before hatching Dr. McMenamim does not know. The fact that the changes in lipid levels paralleled growth retardation seems significant and he plans further experiments to clarify the relationship.

"This is perhaps just another link in the increasing chain of evidence pointing to the importance of these fatty substances in life processes," he said.

Science News Letter, March 12, 1955

INVENTION

Missiles Set Off On Targets by Radio

➤ A TRAIN of guided missiles, directed to targets by radar, can now be set off one at a time at given targets when they are told to by radio beams.

Radio control apparatus for detonating a string of missiles at predetermined targets has been patented. The radio-radar missile control system also embodies the means for changing the path of one or all of the missiles while in flight.

Invented by Everard M. Williams of Pittsburgh, Pa., and Edwin V. Cousy of New York City, the missiles each carry electronic equipment set to receive high frequency radio pulses. When the missile is over a target or on a target, the radio beam from a control point automatically dumps and detonates the weapon at a preset range. The control apparatus was awarded patent No. 2,703,399.

Science News Letter, March 12, 1955

Questions

AGRICULTURE—How much land is Russia planning to cultivate for grain this year? p. 163.

□ □ □

BOTANY—What is the color of the light that is given off by plants but is invisible to the human eye? p. 169.

□ □ □

INVENTION—How can polarization be used to detect radioactive fall-out? p. 168.

□ □ □

METEOROLOGY—What is the width of a tornado's destructive path? p. 170.

□ □ □

PSYCHOLOGY—Why are mirrors used in some cases to teach children to read? p. 169.

□ □ □

Photographs: Cover, pp. 165 and 167, Fremont Davis; p. 163, Convair; p. 170, United States Weather Bureau, F. E. Cortrell; p. 176, Bijou Manufacturing Co., Inc.

• New Machines and Gadgets •

For sources of more information on new things described, send a self-addressed stamped envelope to SCIENCE NEWS LETTER, 1719 N St., N.W., Washington 6, D. C., and ask for Gadget Bulletin 769. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

DOUBLE AUTOMATIC shotgun features short recoil system which "floats" the barrel to a rest against balanced springs. Weighing about a pound less than similar shotguns, the new hunting weapon is designed for a 12-second, two-finger takedown and completely interchangeable barrels.

Science News Letter, March 12, 1955

PLASTIC PORTFOLIO for businessmen, publicists and artists is a lightweight, multi-purpose case. Fabricated of vinyl plastic except for the zipper pull, the portfolio is available in a variety of colors and embossed patterns.

Science News Letter, March 12, 1955

IMPROVED TYPEWRITER bail gives secretaries a clear view of printed matter at all times. The transparent paper-lock bar eliminates the blind line created by the conventional solid bail. Designed to be installed on most standard machines in a matter of minutes, number scales on transparent bar are electrochemically engraved for permanence.

Science News Letter, March 12, 1955

DUSTING MITT is made of fur-like Dynel, described as a new fiber. Entirely washable, the worn-like-a-glove duster,

shown in the photograph, eliminates having to fold and refold dust rags. Additional uses include its handiness for washing and polishing cars or scrubbing floors.

Science News Letter, March 12, 1955

TRANSPARENT BOOK covers for protection against wear, tear, water and grease are made of plastic and available in three book sizes, 7¼, 8¾ and 9¾ inches. Adjustable to book thickness, the covers are fitted by placing a pocket over the binding's edge.

Science News Letter, March 12, 1955

ELECTRONIC BEACHCOMBER, an outgrowth of the armed forces mine detector, can be used by prospectors or treasure-hunters for detecting small metal objects under water, rock, ice, cement and other substances. Weighing nine pounds, the metal dectector has a one-knob tuning control, uses standard low-voltage batteries, headphone and a meter.

Science News Letter, March 12, 1955

ALUMINUM-COATED FABRIC for protective garments weighs only half as much as other materials for "hot jobs." Protecting the wearer by reflecting radiant heat rather than insulating against it, the aluminum coating is applied to a light asbestos fabric base. Flexibility gives wearer more working freedom.

Science News Letter, March 12, 1955

ELECTRIC SPRAYING KIT contains an all-metal gun which is self-cleaning and weighs only three and a half pounds. An automatic strainer and filter are built in. The all-electric spray kit comes in a heavy duty steel case with 15 feet of plastic spray tubing and a 15-foot extension cord. The gun is self-cleaned in 20 seconds by spraying solvent through it.

Science News Letter, March 12, 1955

Do You Know?

Every state in the nation has more *students* enrolled in colleges and universities now than during the last school year, fall registration figures show.

In the *blood* stream, the normal red cell lives for about 120 days, but in storage at body temperature it dies in three or four days.

All living material contains traces of radioactive *carbon 14* which is formed at high altitudes by the action of cosmic rays on atmospheric nitrogen.

The estimated number of *drug addicts* in the United States has dropped from between 110,000 and 150,000 in 1924 to 60,000 at the present time.

Legumes require traces of *molybdenum* to take nitrogen from the atmosphere and convert it to plant protein.